Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. **(Currently amended):** A circuit to control the capacitance of a variable capacitor in a strictly linear mode through a steady tuning voltage and to achieve a high Q-factor at the same time; comprising:

~~means for~~ a set of individual small capacitors;

~~means for~~ a set of switching devices, ~~to continually switch~~ allowing a steady ramp-up/ramp-down phase between the points of being fully switched on and fully switched off, and where said switching devices are connected in series with said~~on each~~ capacitors of said set of capacitors, to connect a multiple of said capacitors in parallel;

~~means~~ a set of circuits to ~~linearly~~ control the switching ~~function~~ operation in a ramp-up/ramp-down manner between the points of being fully switched on and fully switched off, ~~for~~ provided to each of said set of ~~continuous~~ switching devices;

~~means for~~ a set of translinear amplifier stages to produce ~~said linear controls~~ the ramp-up/ramp-down signal for each of said set of switching ~~functions~~devices and implemented within said set of circuits to control the switching operation;

~~means~~ a circuit to individually provide the threshold points for each individual capacitor switching stage; and

~~means~~ a circuit to provide a signal, dependent on the tuning voltage, dedicated for the voltage controlled capacitance change, to all of said translinear amplifier stages.

2. **(Currently amended):** The circuit of claim **1** wherein said switching device with steady transition phase is a FET transistor.

3. **(Currently amended):** The circuit of claim **2** wherein said switching device with steady transition phase is a P-MOS or N-MOS junction FET.

4. **(Currently amended):** The circuit of claim **2** wherein said switching device with steady transition phase is a CMOS FET.

5. **(Currently amended):** The circuit of claim **1** wherein said ~~means~~ circuit to individually provide said threshold points for each individual capacitor switching stage generates a set of reference values, one value for each capacitor switching stage.

6. **(Currently amended):** The circuit of claim 5 wherein said ~~means~~ circuit to generate a set of reference values, one for each of said translinear amplifier stages, is implemented as a chain of resistors.

7. **(Original)**: The circuit of claim **1** wherein said translinear amplifier has a gain of 1, the typical gain of translinear amplifiers.

8. **(Original)**: The circuit of claim **1** wherein said translinear amplifier has a gain differing from 1, which gives one more degree of freedom to optimize operating parameters, like overlapping of capacitor switching operation.

9. **(Currently amended):** The circuit of claim **1** wherein said ~~means~~ circuit to provide a signal, dependent on the tuning voltage, dedicated for the voltage controlled capacitance change, is a single signal connected to all amplifier inputs.

10. **(Currently amended):** The circuit of claim **1** wherein the ~~means~~ circuit to provide the output reference ~~signal~~ level for the translinear amplifier, is a single signal connected to all translinear amplifier reference outputs.

11. **(Original)**: The circuit of claim **1** wherein said capacitors are discrete capacitor components.

12. **(Currently amended):** The circuit of claim **1** wherein said capacitors are manufactured on a planar carrier, separate from the circuit carrier.

13. **(Original)**: The circuit of claim **1** wherein said capacitors are integrated on a semiconductor substrate, but on a separate substrate than said switching devices and amplifiers.

14. **(Original)**: The circuit of claim **1** wherein said capacitors are integrated on a semiconductor substrate and on the same substrate as said switching devices and amplifiers.

15. **(Original)**: The circuit of claim **1** wherein said capacitors are manufactured as a Metal-Oxide structure.

16. **(Original)**: The circuit of claim **1** wherein said capacitors are manufactured as a junction capacitor.

17. **(Currently amended):** A circuit to control the capacitance of a variable capacitor in a strictly linear mode through a steady tuning voltage and to achieve a high Q-factor at the same time by sharply cutting off the control signal, when said switching device is outside its ~~dedicated active working~~ steady transition area; comprising:

~~means for~~ a set of individual small capacitors;

~~means for~~ a set of switching devices ~~to continually switch on~~ allowing a steady ramp-up/ramp-down phase between the points of being fully switched on and fully switched off, and where said switching devices are connected in series

with saideach capacitors of said set of capacitors, to connect a multiple of said capacitors in parallel;

means a set of circuits to linearly control the switching function operation in a ramp-up/ramp-down manner, for provided to each of said set of continuous switching devices, when as long as said switching device is operates in its dedicated active workingsteady transition area, i.e. within the points of being fully switched on and fully switched off;

means a circuit to drive said switching device to a fully on status, when said switching device is outside its dedicated active workingsaid steady transition area on the lower resistance side, and implemented within said set of circuits to control the switching operation.

means a circuit to drive said switching device to a fully off status, when said switching device is beyond its dedicated active workingsaid steady transition area on the higher resistance side, and implemented within said set of circuits to control the switching operation.

means for a set of translinear amplifier stages to produce said linear controls the ramp-up/ramp-down signal for each of said set of switching devices, and implemented within said set of circuits to control the switching operation;

means a circuit to individually provide the threshold points for each individual capacitor switching stage; and

means a circuit to provide a signal, dependent on the tuning voltage, dedicated for the voltage controlled capacitance change, to all of said translinear amplifier stages.

18. **(Currently amended):** The circuit of claim **17** wherein said ~~means~~ circuit to drive said switching device to a fully-on status, when said switching device is outside its ~~dedicated active working~~desired steady transition area on the lower resistance side is provided by additional circuit elements, working as a signal-limiting function.

19. **(Currently amended):** The circuit of claim **17** wherein said ~~means~~ a circuit to drive said switching device to a fully-off status, when said switching device is outside its ~~dedicated active working~~desired steady transition area on the higher resistance side is provided by additional circuit elements, working as a signal-limiting function.

20. **(Currently amended):** The circuit of claim **18** wherein said signal-limiting function to drive said switching device to a fully-on status, when said switching device is outside its ~~dedicated active working~~desired steady transition area on the lower resistance side, are implemented within the translinear amplifier circuit.

21. **(Currently amended):** The circuit of claim **19** wherein said signal-limiting function to drive said switching device to a fully-off status, when said switching device is outside its ~~dedicated active working~~desired steady transition area on the higher resistance side, are implemented within the translinear amplifier circuit.

22. **(Original)**: The circuit of claim **17** wherein said translinear amplifier has a gain of 1, the typical gain of translinear amplifiers.

23. **(Currently amended):** The circuit of claim **17** wherein said translinear amplifier has a gain differing from 1, which gives one more degree of freedom to optimize operating parameters, like overlapping of capacitor switching operation and signal cut-off at the edges of the ~~dedicated active working~~steady transition area.

24. **(Cancelled)**:

25. **(Cancelled)**:

26. **(Currently amended):** A circuit to control the capacitance of a variable capacitor in a strictly linear mode through a steady tuning voltage and to achieve a high Q-factor at the same time and to compensate the temperature deviation of the capacitor switching device; comprising:

~~means for~~ a set of individual small capacitors;

~~means for~~ a set of switching devices ~~to continually switch~~ allowing a steady transition phase between the points of being fully switched on and fully switched off, and where said switching devices are connected in series with said ~~on each~~ capacitors of said set of capacitors to connect a multiple of said capacitors in parallel;

~~means~~ a set of circuits to ~~linearly~~ control the switching ~~function~~ operation for each of said set of ~~continuous~~ switching devices, including a steady transition phase;

~~means for~~ a set of translinear amplifier stages to produce said ~~linear~~ controls signal for said switching ~~functions~~devices, and implemented within said set of circuits to control the switching operation;

~~means~~ a circuit to compensate the temperature deviation of said switching device;

~~means~~ a circuit to individually provide the threshold points for each individual capacitor switching stage; and

~~means~~ a circuit to provide a signal, dependent on the tuning voltage, dedicated for the voltage controlled capacitance change, to all of said translinear amplifier stages.

27. **(Currently amended):** The circuit of claim **26** wherein said ~~means~~ circuit to compensate the temperature deviation of said switching device is provided by feeding a modified reference voltage to said translinear amplifier's output reference point, to mirror a temperature correcting signal into the control signal of said switching device.

28. **(Currently amended):** The circuit of claim **27** wherein said ~~means~~ circuit to compensate the temperature deviation of said switching device, uses a device of

the same type as said switching device itself, to produce an exact equivalent of said temperature deviation.

29. **(Currently amended):** A circuit to control the capacitance of a variable capacitor ~~in~~ with a steady ~~mode~~, but ~~with~~ predefined non-linear relation to the tuning voltage, through a steady tuning voltage and to achieve a high Q-factor at the same time; comprising:

~~means for~~ a set of individual small capacitors;

~~means for~~ a set of switching devices ~~to continually switch~~ allowing a steady ramp-up/ramp-down phase between the points of being fully switched on and fully switched off, and where said switching devices are connected in series with said capacitors of said set of capacitors, to connect a multiple of said capacitors in parallel;

~~means~~ a set of circuit to ~~linearly~~ control the switching ~~function~~ operation in a ramp-up/ramp-down manner between the points of being fully switched on and fully switched off, ~~for~~ provided to each of said set of ~~continuous~~ switching devices;

~~means for~~ a set of translinear amplifier stages to produce ~~said linear controls~~ the ramp-up/ramp-down signal for each of said set of ~~continuous~~ switching devices, and implemented within said set of circuits to control the switching operation;

~~means~~ a circuit to individually provide the threshold points for each individual capacitor switching stage;

20 ~~means~~ a circuit to provide a signal, dependent on the tuning voltage, dedicated for the voltage controlled capacitance change, to all of said translinear amplifier stages and;

~~means~~ a circuit to provide a non-linear relation between said tuning voltage and said threshold points.

30. **(Currently amended):** The circuit of claim **29** wherein said ~~means~~ circuit to individually provide said threshold points for each individual capacitor switching stage generates a set of reference values, one value for each capacitor switching stage.

31. **(Currently amended):** The circuit of claim **29** wherein said ~~means~~ a circuit to provide a non-linear relation between said tuning voltage and said threshold points is provided by specifically selecting the steps of ~~said~~ set of reference values in a way, to achieve said desired non-linear relation.

32. **(Currently amended):** The circuit of claim **30** wherein said ~~means~~ circuit to generate a set of reference values, one for each of said translinear amplifier stages, is implemented as a chain of resistors.

33. **(Currently amended):** A method to control the capacitance of a variable capacitor in a strictly linear mode through a tuning voltage and to achieve a high Q-factor at the same time; comprising:

providing ~~means for~~ a set of individual small capacitors, ~~means for~~ a set of switching devices ~~to continually switch~~ allowing a steady ramp-up/ramp-down phase between the points of being fully switched on and fully switched off, and where said switching devices are connected in series with said~~on each~~ capacitors of said set of capacitors, to connect a multiple of said capacitors in parallel, ~~means~~ a set of circuits to ~~linearly~~ control the switching ~~function~~ operation in a ramp-up/ramp-down manner between the points of being fully switched on and fully switched off, provided to ~~for~~ each of said set of ~~continuous~~ switching devices, ~~means for~~ a set of translinear amplifier stages to produce said ~~linear~~ controls signal for said ramp-up/ramp-down switching, operation, ~~means to linearly control said switching function for each of said set of continuous switching devices,~~ ~~means~~ a circuit to individually provide the threshold points for each individual capacitor switching stage, ~~means~~ a circuit to provide a signal, dependent on the tuning voltage, dedicated for the voltage controlled capacitance change, to all of said translinear amplifier stages;

~~continually~~ fully switching on one of said ~~continuous~~ switching devices in order to completely switch one of said small capacitors in parallel to the already switched on capacitors, one after the other;

fully switching off one of said switching devices in order to completely disconnect one of said small capacitors from the other switched on capacitors, one after the other;

~~linearly~~ ramping up or ramping down ~~controlling~~ the switching ~~function~~ operation ~~for each~~ of one of said ~~continuous~~ switching devices to partially switch,

with increasing/decreasing share, one of said small capacitors in parallel to the already switched on capacitors, one after the other;

amplifying, by ~~the~~ means of a translinear amplifier, the difference of the capacitance tuning voltage and the threshold points of each amplifier stage to produce the linear control signal for said ~~continually~~ ramp-up/ramp-down switching operation;

providing said threshold points for each individual capacitor switching stage; and

supplying a signal, dependent on the tuning voltage, dedicated for the voltage controlled capacitance change, to all of said translinear amplifier stages.

34. **(Currently amended):** The method of claim **33** wherein linearly controlling the switching operation applies to a FET transistor as ~~said~~ the switching device with steady transition phase.

35. **(Currently amended):** The method of claim **34** wherein linearly controlling the switching operation applies to a P-MOS or N-MOS junction FET as said ~~continuous~~ switching device with steady transition phase.

36. **(Currently amended):** The method of claim **34** wherein linearly controlling the switching operation applies to a P-channel or N-channel CMOS FET as said ~~continuous~~ switching device with steady transition phase.

37. **(Original)**: The method of claim **33** wherein individually providing said threshold points for each individual capacitor switching stage generates a set of reference values, one value for each capacitor switching stage.

38. **(Original)**: The method of claim **37** wherein generating a set of reference values, one for each of said translinear amplifier stages, is performed by a chain of resistors.

39. **(Original)**: The method of claim **33** wherein continually switching on one of said small capacitors in parallel to the already switched on capacitors applies to discrete capacitor components.

40. **(Currently amended):** The method of claim **33** wherein continually switching on one of said small capacitors in parallel to the already switched on capacitors applies to capacitors manufactured on a planar carrier, separate from the circuit carrier.

41. **(Original)**: The method of claim **33** wherein continually switching on one of said small capacitors in parallel to the already switched on capacitors applies to capacitors integrated on a semiconductor substrate.

42. **(Original)**: The method of claim **33** wherein supplying a tuning voltage, dedicated for the voltage controlled capacitance change, to all of said translinear amplifier stages uses a single signal connected to all amplifier inputs.

43. **(Currently amended):** A method to control the capacitance of a variable capacitor in a strictly linear mode through a tuning voltage and to achieve a high Q-factor at the same time by sharply cutting off the control signal, when said switching device is outside its ~~dedicated active working~~steady transition area; comprising:

providing ~~means for~~ a set of individual small capacitors, ~~means for~~ a set of switching devices ~~to continually switch~~ allowing a steady ramp-up/ramp-down phase between the points of being fully switched on and fully switched off, and where said switching devices are connected in series with ~~on~~ said capacitors in parallel, one for each of said small capacitors, ~~means~~ a set of circuits to ~~linearly~~ control the switching ~~function~~ operation in a ramp-up/ramp-down manner between the points of being fully switched on and fully switched off , provided to~~for~~ each of said ~~continuous~~ switching devices~~, when said switching device is in its dedicated active working area~~, ~~means~~ a circuit to overdrive said switching device to a fully-on status, when said switching device is outside its ~~dedicated active working~~steady transition area on the lower resistance side, ~~means~~ a circuit to overdrive said switching device to a fully-off status, when said switching device is beyond its ~~dedicated active working~~steady transition area on the higher resistance side, ~~means for~~ a set of translinear amplifier stages to produce said ~~linear~~ controls

signal for said switching functions, ~~means~~ a circuit to individually provide the threshold points for each individual capacitor switching stage, ~~means~~ a circuit to provide a signal, dependent on the tuning voltage, dedicated for the voltage controlled capacitance change, to all of said translinear amplifier stages;

~~continually~~ steadily ramp-up/ramp-down switching on one of said ~~continuous~~ switching devices in order to partially switch, with increasing/decreasing share, one of said small capacitors in parallel to the already switched on capacitors, one after the other;

linearly controlling the switching function for each of said ~~continuous~~ switching devices, when said switching device is in its ~~dedicated active working~~steady transition area;

driving said switching device to a fully on status, when said switching device is outside its ~~dedicated active working~~steady transition area on the lower resistance side;

driving said switching device to a fully off status, when said switching device is beyond its ~~dedicated active working~~steady transition area on the higher resistance side;

amplifying, by ~~the means of~~ a translinear amplifier, the difference of the capacitance tuning voltage and the threshold points of each amplifier stage to produce the linear control signal for said ~~continually~~ switching operation;

providing said threshold points for each individual capacitor switching stage; and

supplying a signal, dependent on the tuning voltage, dedicated for the voltage controlled capacitance change, to all of said translinear amplifier stages.

44. **(Currently amended):** The method of claim **43** wherein driving said switching device to a fully-on status, when said switching device is outside its ~~dedicated active working~~desired steady transition area on the lower resistance side uses additional circuit elements, working as a signal-limiting function.

45. **(Currently amended):** The method of claim **43** wherein driving said switching device to a fully-off status, when said switching device is outside its ~~dedicated active working~~steady transition area on the higher resistance side uses additional circuit elements, working as a signal-limiting function.

46. **(Currently amended):** The method of claim **44** wherein said signal-limiting operation to drive said switching device to a fully-on status, when said switching device is outside its ~~dedicated active working~~steady transition area on the lower resistance is implemented within the translinear amplifier.

47. **(Currently amended):** A method to control the capacitance of a variable capacitor in a strictly linear mode through a tuning voltage and to achieve a high Q-factor at the same time and to compensate the temperature deviation of the capacitor switching device; comprising:

providing ~~means for~~ a set of individual small capacitors, ~~means for~~ a set of switching devices with steady transition phase to continually switch on said capacitors in parallel, ~~means for~~ a set of translinear amplifier stages to produce said linear controls for said switching functions, ~~means~~ a circuit to linearly control the switching function for each of said ~~continuous~~ switching devices with steady transition phase, ~~means~~ a circuit to compensate the temperature deviation of said switching device, ~~means~~ a circuit to individually provide the threshold points for each individual capacitor switching stage, ~~means~~ a circuit to provide a signal, dependent on the tuning voltage, dedicated for the voltage controlled capacitance change, to all of said translinear amplifier stages;

continually switching on one of said ~~continuous~~ switching devices with steady transition phase in order to switch one of said small capacitors in parallel to the already switched on capacitors, one after the other;

linearly controlling the switching function for each of said ~~continuous~~ switching devices with steady transition phase;

compensating the temperature deviation of said switching;

amplifying, by ~~the means of~~ a translinear amplifier, the difference of the capacitance tuning voltage and the threshold points of each amplifier stage to produce the linear control signal for said continually switching operation;

providing said threshold points for each individual capacitor switching stage; and

supplying a signal, dependent on the tuning voltage, dedicated for the voltage controlled capacitance change, to all of said translinear amplifier stages.

48. **(Original)**: The method of claim **47** wherein compensating the temperature deviation of said switching device is provided by feeding a modified reference voltage to said translinear amplifier's output reference point, to mirror a temperature correcting signal into the control signal of said switching device.

49. **(Original)**: The method of claim **48** compensating the temperature deviation of said switching device, uses a device of the same type as said switching device itself, to produce an exact equivalent of said temperature deviation.

50. **(Currently amended):** A method to control the capacitance of a variable capacitor in a steady ~~mode~~, but with predefined non-linear relation to the tuning voltage, through a tuning voltage and to achieve a high Q-factor at the same time; comprising:

providing ~~means for~~ a set of individual small capacitors, ~~means for~~ a set of switching devices with steady transition phase to continually switch on said capacitors in parallel, ~~means~~ a circuit to linearly control the switching function for each of said ~~continuous~~ switching devices with steady transition phase, ~~means for~~ a set of translinear amplifier stages to produce said linear controls for said switching functions, ~~means~~ a circuit to individually provide the threshold points for each individual capacitor switching stage, ~~means~~ a circuit to provide a signal, dependent on the tuning voltage, dedicated for the voltage controlled capacitance change, to all of said translinear amplifier stages;

continually switching on one of said ~~continuous~~ switching devices with steady transition phase in order to switch one of said small capacitors in parallel to the already switched on capacitors, one after the other;

linearly controlling the switching function for each of said ~~continuous~~ switching devices with steady transition phase;

amplifying, by ~~the means of~~ a translinear amplifier, the difference of the capacitance tuning voltage and the threshold points of each amplifier stage to produce the linear control signal for said continually switching operation;

providing said threshold points for each individual capacitor switching stage, producing non-linear instead of linear steps;

supplying a signal, dependent on the tuning voltage, dedicated for the voltage controlled capacitance change, to all of said translinear amplifier stages; and

providing a non-linear relation between said tuning voltage and said threshold points.

51. **(Original)**: The method of claim **50** wherein individually providing said threshold points for each individual capacitor switching stage generates a set of reference values, one value for each capacitor switching stage.

52. **(Original)**: The method of claim **50** wherein providing a non-linear relation between said tuning voltage and said threshold points is provided by specifically

selecting the steps of said set of reference values in a way, to achieve said desired non-linear relation.